REMARKS

Claims 1-6 and 8-17 are all the claims pending in the application.

Initially, Applicants thank the Examiner for indicating that claims 3-6 and 8-17 are allowable.

I. Rejection of Claims 1 and 2 under 35 U.S.C. § 103(a)

Claims 1 and 2 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Underwood (US 4,994,797) in view of Smits (US 4,359,481).

Applicants respectfully traverse the rejection.

Claim 1 is directed to a fish processing method comprising generating a smoking material from a smoke generating device, into which no air is introduced from a cast portion for feeding the smoke material and smoke discharge path, removing at least one unnecessary substance selected from the group consisting of soot and tar from the smoking material under a condition where air is interrupted or air is not introduced, bringing, at a normal pressure or a pressurized condition, the smoking material into contact or into mixing contact by a mixer with at least one of water, a solution or a solution comprising at least one additive selected from the group consisting of an antioxidant, a pH adjuster and a condiment to dissolve a smoke dry component to form a smoking liquid, and applying the smoking liquid to a fish to produce a smoke dried product.

Underwood relates to the manufacture of a smoke flavoring from wood vinegar. An object is to refine raw wood vinegar from a dry-distillate, and add the refined product to a foodstuff as a flavor enhancer (for imparting a smoky aroma). According to the conventional classification of liquid smoke, Underwood falls under the category of wood vinegar, *i.e.,* pyroligneous acid (obtained from dry-distilled wood). Wood vinegars obtained by dry distillation and incomplete combustion show a large difference in terms of absolute yield and fractional

yield. The same liquid smoke can also differ in terms of the oxidation products and aroma, which necessitates different classification criteria. In contrast, the earlier Smith patent relates to liquid smoke.

According to the FIG. 1 of Underwood, the wood vinegar components are changed to a gaseous state as the temperature increases when the smoke is produced, and nitrogen or discharged wood gas is used as a carrier gas in order to readily isolate the solid components. The object is presumably associated with preventing oxidative components from being produced.

Accordingly, the char (solid) is separated out in a high-temperature state within the unit 23, the tar components are removed in the separation vessel 25, and the wood vinegar and carrier gas are separated in the unit 24. The nitrogen used as a carrier gas and the wood gas components for circulation dissolve in the wood vinegar in accordance with Henry's Law. However, while the method employed in Underwood involves using the extracted wood vinegar neat or in a water dilution as a pickling liquid so as to adsorb the components of the wood vinegar, the gas discharged from unit 24 (gaseous products) is not further dissolved to saturation in an aqueous solution. As a result, Underwood fails to disclose that the smoking material is brought into contact or into mixing contact by a mixer with at least one of water, a solution or a solution comprising at least one additive selected from the group consisting of an antioxidant, a pH adjuster and a condiment to dissolve a smoke dry component to form a smoking liquid, as recited in claim 1.

In addition, even if the gaseous products (entrained nitrogen or any other gas than the wood gas) of Underwood were dissolved in an aqueous solution, a smoking liquid would not be obtained.

Furthermore, there are differences between the present invention and Underwood and

Smits.

The product obtained by the method of the present invention is a tar-depleted wood gas smoke flavoring. It is obtained by using additive-containing water to dissolve only the wood gas components of the dry distillate shown in FIG. 5-14 (below). The main wood-gas-derived components of the resulting liquid smoke solution are carbon dioxide, carbon monoxide, lower hydrocarbons, hydrogen, and the like. Small quantities of formaldehyde, phenols, and other components are also present, however, they have two intended effects. One is to prevent myoglobin (Mb), a red pigment protein present in fish meat, from changing into metmyoglobin (which contributes to browning). The other effect is to prevent or delay the release of any unpleasant ("fishy") odors, which are given off by a variety of components generated as a result of the cleaving of the Mb porphyrin ring formed after metmyoglobin has formed.

The smoking liquid obtained by the present invention is used to treat fish by perfusion, and thus has characteristics that are completely different from those of the liquid smoke solutions described below. The smoking liquid cannot be designed for commercial production (it is primarily used as an on-site manufacturing consumable and cannot be marketed directly). Also, the smoking liquid, which is produced using 1 m^3 of wood gas, can be produced in an amount of 20 m^3 assuming a wood gas solubility of 50 cc/L. Approximately 4 kg of wood is needed to produce 1 m^3 of wood gas. Just 0.2 kg of wood is needed to produce 1 m^3 of smoking liquid.

With respect to Underwood, FIG. 5-14 below shows a process for removing tar from a dry distillate and unnecessary components from raw wood vinegar. Accordingly, the method for manufacturing the liquid smoke is described mainly in regard to raw wood vinegar components (water, as well as carbonyl compounds, phenols, aldehydes, and other coloring components in the main) as main ingredients. The solution is intended to impart a smoky flavor to a foodstuff.

It follows that the product is a smoke flavoring. Furthermore, the wood gas components are used as a carrier gas in the same way as nitrogen, and may get diluted, which makes it completely different from the smoking liquid obtained by the present invention in terms of the intended use.

According, approximately 3300 kg of wood is needed to produce 1 m^3 of liquid smoke in the manufacturing step, assuming a fractional yield of 30%. A major difference is apparent since the objective differs from what is intended in regard to manufacturing the smoking liquid obtained by the present invention. In this regard, 3300 kg of wood is needed to produce 1 m^3 of liquid smoke.

With respect to Smits, it is directed to a method for manufacturing a liquid smoke without using dry-distilled smoke, instead involving smoke that contains oxides (chiefly, carbonyl compounds, phenols, and other flavor components) produced in the presence of an adjusted oxygen. It is an object of Smits to impart a smoky taste to foodstuffs and thereby yield a smoke flavoring. The absolute and fractional yields of the smoke source and wood vinegar used in this instance are lower than those obtained using dry-distilled wood vinegar.

When wood is dry-distilled, it decomposes under heat into the following components. Raw wood vinegar is used in Underwood and Smits while wood gas is used in the present invention.

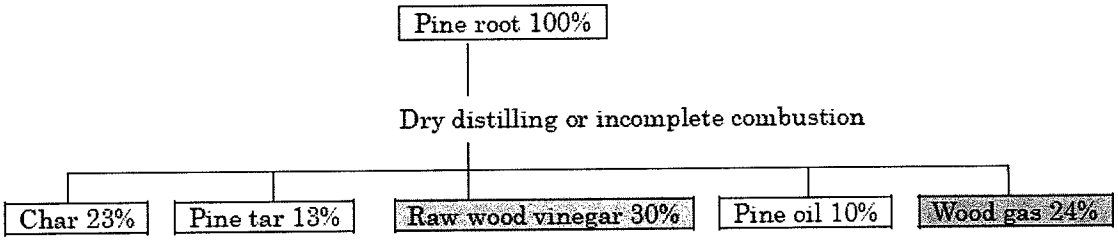


FIG. 5-14 Dry-distillate of pine

Moreover, Underwood describes the wieners treated in Example 5 as having the "most appealing brown color," indicating the wieners are brownish-red and are formed with a glazed exterior containing the color-imparting carbonyl and phenol compounds that are a hallmark of smoke products. Insomuch as there is a difference from the red (pink) color produced by myoglobin formed once the wood gas components have penetrated, it being indicated that the wood gas components do not contribute to the end product. Japanese katsuobushi is one of the least malleable types of processed food that turns red after having been perfused with wood gas. Performing the smoke treatment in the manufacturing step causes the Mb to bond to carbon monoxide, and the red pigment solidifies as the moisture is removed. This produces the attractive and distinctive ruby color.

In the present invention, the wood gas components dissolve in water in a stable manner due to the pressure balance between the gas. Therefore, when the obtained smoking liquid is exposed to atmospheric air, the wood gas components are released from the aqueous solution into the air until equilibrium pressure is attained. This process ends when nothing more can be released. This approach can thus be used in a state where there is no contact with atmospheric air, or in continuous production.

In contrast, since Underwood principally comprises liquid components that are stable under normal temperatures, its effect as liquid smoke can only be expected at low concentrations, even if it is diluted with water.

For at least the above reasons, it is respectfully submitted that Underwood and Smits do not disclose, teach or suggest every element of claim 1, and thus does not render claim 1 obvious.

Additionally, claim 2 depends from claim 1 and thus, it is respectfully submitted that claim 2 is patentable for at least the same reasons as claim 1.

In view of the above, withdrawal of the rejection is respectfully requested.

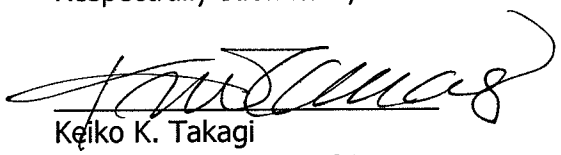
II. Conclusion

In view of the above, reconsideration and allowance of claims 1-6 and 8-17 is respectfully requested.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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